REMARKS

In connection with Applicants' Request for Continued Examination (RCE), Applicants respectfully request respectfully request entry of the foregoing and reexamination and reconsideration of the subject matter identified in caption, pursuant to and consistent with 37 C.F.R. §1.114, and in light of the remarks which follow.

Claims 25-36, 38 and 40-48 are pending in this application. Claims 1-24, 37 and 39 were previously cancelled.

Claim 25 has been amended to recite the composition has: (1) smooth impact resistance and/or notched impact resistance greater than compositions having the same composition except for the second additive B, or (2) lower viscosity than compositions having the same composition except for the second additive B than compositions having the same composition except for the second additive B. Support for this amendment is found in the specification at least in Table 2. Claims 25-36, 38 and 40-48 have been amended to correct a typographical error by placing a period after the number of each of the claims.

No new matter has been added in making these amendments

General Comments

The claims of the instant application are directed to a thermoplastic composition comprising a mixture of a polyamide and/or polyester matrix with at least:

(i) a first additive of formula $R\text{-}Z_u$, in which:

R is a hydrocarbon radical optionally comprising one or more heteroatoms, wherein R comprises 2 to 100 carbon atoms;

u is an integer greater than or equal to 1, and

Z is an acid, amine or alcohol functional group; and

(ii) a second additive (B) obtained by a reaction between at least:

a) one monofunctional compound of formula (III):

$$R^3\text{-}Y \qquad \text{(III)}$$

b) one branching compound of formula (IV):

$$Y\text{-}R^4\text{-}X_m \qquad (IV)$$

c) optionally, one multifunctional compound of formula (I):

$$R^1\text{-}X_n \qquad (I);\ \text{and}$$

d) optionally, one bifunctional monomer of formula (II) or a corresponding cyclic form

$$X\text{-}R^2\text{-}Y \qquad (II)$$

in which:

R^1, R^2, R^3 and/or R^4 represent, independently of each other, a hydrocarbon radical optionally comprising one or more heteroatoms;

X and Y are antagonist reactive functional groups capable of reacting with each other to form an amide bond;

n is an integer ranging from 3 to 50;

m is an integer ranging from 2 to 10; and

with the proviso that R, R^1, R^2, R^3 and R^4 do not comprise an amine, acid or alcohol functional group capable of forming an amide and/or ester bond,

where the composition has: (1) smooth impact resistance and/or notched impact resistance greater than compositions having the same composition except for the second additive B, or (2) lower viscosity than compositions having the same composition except for the second additive B than compositions having the same composition except for the second additive B. .

Table 2 in the specification provides the following comparison of properties of different compositions. C1 is blend of polyamide PA 66 and glass fibers. Components T2-T4 are additives encompassed by the second additive B of the claims. T2 is isophthalic acid. T3 is trimesic acid and T4 is 2,2,6,6-tetrakis(β-carboxyethyl) cyclohexanone. HBPA is a functionalized hyperbranched copolyamide, encompassed by the first additive of the claims. The compositions varied primarily by the additives present.

TABLE 2

Compositions and properties	C1	C2	C3	C4	C5	C6	7	8
PA 66	48.7	48.5	48.2	48.0	47.7	43.7	47.0	47.2
GF	50	50	50	50	50	50	50	50
T2		0.2		0.2			0.2	
T4			0.5	0.5			0.5	
T3								0.5
HBPA ex. 1					1.0	5.0	1.0	1.0
Impact resistance smooth at 23° C. (kJ/m^2) ISO 179-leU	90.8	73.6	80	78	82	88	88	93.4
Impact resistance notched at 23° C. (kJ/m^2) ISO 179-leA	13.6	9.6	10.5	10.0	12	13.4	13.0	12.2
Spiral length (mm)*	290	360	300	350	340	500	470	410
Modulus Tension at 23° C. (N/mm^2) ISO 527	16100	16700	16100	16100	16400	16400	16400	16800
Surface appearance **	0	+	0	+	−	−−	+	++

Below is a comparison of compositions C1-C4 with compositions 7 and 8. C1 is blend of polyamide PA 66 and glass fibers. T2 is isophthalic acid. T3 is trimesic acid and T4 is 2,2,6,6-tetrakis(β-carboxyethyl)cyclohexanone. HBPA is a functionalized hyperbranched copolyamide, the first additive of the claims.

Compositions and properties	C1	C2	C3	C4	7	8
PA 66	48.7	48.5	48.2	48.0	47.0	47.2
GF	50	50	50	50	50	50
T2		0.2		0.2	0.2	
T4			0.5	0.5	0.5	
T3						0.5
HBPA ex. 1					1.0	1.0
Impact resistance smooth at 23° C. (kJ/m^2) ISO 179-leU	90.8	73.6	80	78	88	93.4
Impact resistance notched at 23° C. (kJ/m^2) ISO 179-leA	13.6	9.6	10.5	10.0	13.0	12.2
Spiral length (mm)*	290	360	300	350	470	410
Modulus Tension at 23° C. (N/mm^2) ISO 527	16100	16700	16100	16100	16400	16800
Surface appearance **	0	+	0	+	+	++

The presence of the additives T2 and T4, either alone or in combination, lowers the smooth impact resistance from about 91 kJ/m^2 in C1, without any additive, to about 74-80 kJ/m^2, with the additives. Additives T2 and T4 correspond to the second additive B of the instant claims. However, compositions 7 and 8 which contain both the first and second additives of the instant claims, allowed the compositions to retain or increase the smooth impact resistance. (88-93.4 kJ/m^2)

Similar results were obtained with the notched impact resistance. The presence of additives T2 and T4, either alone or in combination, lowers the notched impact resistance from about 13.6 kJ/m^2 in C1, without any additive, to about 9.6-10.5 kJ/m^2, with the additives. Additives T2 and T4 correspond to the second additive B of the instant claims. However, compositions 7 and 8, which contain both

the first and second additives of the instant claims, allowed the compositions to retain or increase the notched impact resistance. (12.2-13.0 kJ/m^2).

The presence of additives T2 and T4, either alone or in combination, increased the spiral length (lowered the viscosity) from about 290 mm, without any additive, to about 300-360 mm, with the additives. Additives T2 and T4 correspond to the second additive B of the instant claims. However, compositions 7 and 8, which contain both the first and second additives of the instant claims, allowed the compositions to increase the spiral length to 410-470 mm.

The use of additives T2 and T4 (the second additive B of the claims) resulted in lower smooth impact resistance and notched impact resistance, while increasing the spiral length (lowering the viscosity). The addition of the HBPA additive (the first additive of the claims) allowed the composition to maintain or increase both the smooth impact resistance and the notched impact resistance, while providing a greater spiral length (lower viscosity) to the composition.

There is nothing in the cited prior art that would indicate that the decrease in both the smooth and notched impact resistance from the use of additives T2 and T4, the second additives of the instant claims, could be overcome by the addition of HBPA (additive 1 of the instant claims).

Rejection under 35 U.S.C. §103

The Official Action rejected claims 25-36, 38 and 40-48 under 35 U.S.C. §103(a) as allegedly being obvious over French Patent Document No. FR 2 833 603 (*FR '603*) in view of U.S. Patent No. 6,319,575 (*Takashima et al*).

Applicants respectfully submit that claims 25-36, 38 and 40-48 are not obvious over French Patent Document No. FR 2 833 603 (*FR '603*) in view of U.S. Patent No. 6,319,575 (*Takashima et al.*).

To establish a *prima facie* case of obviousness, three basic criteria must be met. (MPEP 2143) First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

FR '603 relates to a thermoplastic polymeric composition including a hyperbranched polyamide, and articles formed from such composition. See page 1 of machine translation. *FR '603* does not disclose or suggest each feature recited in independent claim 25. For example, *FR '603* does not disclose or suggest a thermoplastic composition comprising a mixture of a polyamide and/or polyester matrix with at least: (i) a first additive of formula R-Z_u, as recited in claim 25. *FR '603* has no disclosure or suggestion of the recited first additive. Such deficiency of *FR '603* has been acknowledged by the Patent Office at page 3, # (6) of the Official Action.

The Patent Office has relied on *Takashima et al* for disclosing the use of a tricarboxylic acid compound including trimesic acid. The Patent Office has noted that *Takashima et al* teaches that tricarboxylic acid provides improved transparency and whitening resistance at moisture absorbing of films without deteriorating their gas barrier properties. See Official Action at page 4. However, there is nothing in *Takashima et al* that relates to combination of the two additives of the instant claims having the recited properties.

As shown above, Applicants have discovered that by employing both a first additive of formula R-Z_u, and a second additive (B) obtained by a reaction between at least a) one monofunctional compound of formula (III) and b) one branching compound of formula (IV), in the formation of a thermoplastic composition, **surprising** and **unexpected** results can be attained in the form of good fluidity during processing and mechanical strength.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. As shown above, there is no suggestion or motivation in the cited prior art to combine the references to obtain the claimed composition having the improved properties. While *Takashima et al* teaches that tricarboxylic acid provides improved transparency and whitening resistance at moisture absorbing of films without deteriorating their gas barrier properties, these properties are unrelated to the improved properties of the composition of the instant claims.

Therefore, there is no suggestion or motivation in the cited prior art to modify *FR '603* with *Takashima* to obtain the invention of the instant application.

To establish a *prima facie* case of obviousness, there must be a reasonable expectation of success. There is no reasonable expectation of success based on the teachings in the cited prior art that the combination of the two additives required in the claimed composition would result in the claimed improved properties. There would not have been a reasonable expectation of success in obtaining the Applicants' invention when there is not indication in either of the cited references that the claimed improved properties would result from the combination of the two claimed additives. Both of the cited references are silent on these properties. Absent some specific teaching in the cited prior art relating to these properties, one of ordinary skill in the art would not have had a reasonable expectation of success in obtaining the composition with the claimed improved properties. Therefore there is no reasonable expectation of success in producing the applicants' invention based on the teachings in the cited prior art.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. As shown above, there is no teaching in the cited art to combine the two additives required by the claims to obtain a composition with the improved properties. Therefore the cited prior art does not teach or suggest all the claim limitations.

Therefore, claims 25-36, 38 and 40-48 are non-obvious over the applied art. Accordingly, withdrawal of the above §103(a) rejection is respectfully requested.

Conclusion

In view of the foregoing, it is submitted that all claims are in condition for allowance. Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that she be contacted at the number indicated below.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

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